

REMARKS

Reconsideration and allowance of the present patent application based on the following remarks are respectfully requested.

By this Amendment, claims 15, 29 and 42 are amended and claims 32 and 34 are cancelled without prejudice or disclaimer to the subject matter therein. Support for the claim language can be found throughout the initial disclosure. Accordingly, after entry of this Amendment, claims 1-24 and 26-31, 33 and 35-48 will remain pending in the patent application.

Applicant appreciates the Examiner's indication that claims 15-18 and 42-47 are allowable if rewritten in independent form. In response, claims 15 and 42 have been rewritten in independent form. Therefore, Applicant respectfully submits that claims 15-18 and 42-47 are in condition for allowance.

The Examiner indicates in section 13 of the Office Action on page 29 that the previous rejections have been withdrawn in view of the amendments and arguments filed in the previous response. However, Applicant notes that no substantive amendments were made to the claims (for example, claim 1 was not amended) and the Examiner has now rejected the claims over a new combination of references, which references were either previously cited by the Examiner or Applicant. Thus, by virtue of issuing a third non-final Office Action, it appears that there is absolutely nothing Applicant could have done in response to the previous office action that would have led to allowance of the application. Applicant respectfully objects to the piecemeal prosecution of this application. The piecemeal prosecution of this application places an undue and unfair burden on the Applicant and is not in line with the Office's own guidelines. See MPEP 707.02, 707.02(g), 904, 904.02 and 904.03. Per MPEP 707(g), piecemeal examination should be avoided as much as possible. The Examiner ordinarily should reject each claim on all valid grounds available, avoiding, however, undue multiplication of references.

Furthermore, Applicant respectfully notes that the primary reference that the Examiner now relies upon in the Office Action is EP-A-717,532 (Calvignac) which was actually cited in the international search report prepared with respect to the PCT application on which this application is based. In other words, it is an old document that has been on record for this case for many years. Indeed, Applicant disclosed it to the USPTO in the first-

ever IDS that was filed for this case. Applicant is at a loss as to why at this late stage in the prosecution the Examiner now turns to it as the basis for the objections.

With this said, Applicant submits that none of the cited prior art discloses what may be defined as a “REC�” congestion management method. The prior art simply discloses local explicit congestion notification and is, thus, largely similar to the prior art described in the present application with reference to, for example, Figures 2 and 3. By communicating from an upstream port to a further upstream port, details of congestion at the original downstream port (and not simply at the upstream port) problems such as head of line blocking can be avoided. In none of the prior art is there any disclosure of such a “REC�” methodology.

Claim Rejections – 35 U.S.C. §101

Claims 19-25, 36-38 and 41 were rejected under 35 U.S.C. §101 because the claimed invention is directed to non-statutory subject matter. The rejection is respectfully traversed.

The Examiner contends that the language of the claim implies that what is being claimed is a system of software. Applicant respectfully disagrees.

Contrary to Examiner’s contention, the signaling protocol is tied to network switches (the hardware). The signaling protocol is implemented by the network infrastructure comprising the network switches. Furthermore, what is being claimed is a signaling protocol which is a way of managing and handling a flow of messages between ports in a network when congestion occurs. In particular, the protocol requires the generation of the first message in one situation and then the subsequent sending of a further message to a further upstream port when some conditions are satisfied.

Furthermore, the machine-or-transformation test is not the sole test for patent eligibility under §101. The Court’s precedents establish that although that test may be a useful and important clue or investigative tool, it is not the sole test for deciding whether an invention is a patent-eligible “process” under §101, *Bilski v. Kappos*, *Supreme Court of United States*, No. 08-964 (*Decided June 28, 2010*).

Accordingly, reconsideration and withdrawal of the rejection of claims 19-25, 36-38 and 41 under 35 U.S.C. §101 are respectfully requested.

Claim Rejections – 35 U.S.C. §102

Claims 29, 31, 33, 34, 36, 39 and 41 were rejected under 35 U.S.C. §102(e) based on U.S. Pub. No. 2010/0118703 to Mayhew *et al.* (hereinafter “Mayhew”). The rejection is respectfully traversed.

Claim 34 has been cancelled without prejudice or disclaimer, thus rendering moot the rejection of that claim.

Claim 29 has been amended to recite the features of claim 32, which has not been rejected under 35 U.S.C. §102(e) based on Mayhew. Therefore, this rejection of claims 29, 31 and 33 is now moot.

As indicated in Applicant’s previous Response, the present invention relates to the idea of “RECN” (Regional Explicit Congestion Notification). This is different from local explicit congestion notification. In RECN, congestion is notified regionally instead of just locally. Applicant respectfully submits that Mayhew merely relates to local explicit congestion notification.

Applicant respectfully submits that Mayhew does not disclose, teach or suggest a signaling protocol for managing congestion within a network of switches, the protocol comprising, “a first message for sending from a first port at which congestion is detected to an upstream port connected to the first port, the first message requesting storage of data packets received by said upstream port destined for the congested first port; and, a second message for sending by the upstream port to a port further upstream when a threshold amount of data packets destined for the congested first port have been received and stored by the said upstream port, said message requesting storage of data packets destined for the congested first port received by said further upstream port,” as recited in claim 36.

The Examiner refers to paragraph [0006] of Mayhew as allegedly disclosing the step of sending from an upstream port to a further upstream port a message informing the further upstream port of the congestion at the first ingress or egress congested port. However, the passage that the Examiner refers to contains absolutely no mention whatsoever of a RECN methodology. For example, the Examiner has not identified in the Office Action the “upstream port” and the “port further upstream” of claim 36. Rather, the Examiner merely refers to the same switch of Mayhew as corresponding to both the upstream and the further upstream port of claim 36. In addition, the “adjacent upstream port” is not a “port further upstream” because this interpretation is inconsistent with Applicant’s own specification. Unlike claim 36, Mayhew merely discloses that the switch which is experiencing congestion at one of its output ports can transmit to an upstream switch a data link layer packet (DLLP),

one of which contains the output port that is experiencing the congestion and another that specifies the desired action that the upstream switch should take in response to the congestion. This is clearly on a link-by-link basis and not regional. Indeed, the final sentence of this paragraph specifically states that “the format of a DLLP does not allow this mechanism to scale to identify congested paths through the entire fabric”. Thus, the congestion notification from one switch to another is merely a LECN congestion methodology and there is no disclosure or suggestion of a RECN methodology. Therefore, because Mayhew does not disclose, teach or suggest each and every feature of claim 36, Mayhew cannot anticipate this claim.

Applicant respectfully submits that claim 39 is patentable over Mayhew for at least similar reasons as provided above for claim 36 and for the features recited therein. For example, Mayhew does not disclose, teach or suggest an end station for use in a network of interconnected switches, the end station comprising, *inter alia*, “the egress port includes means operable in use to receive a message from a downstream port, the message containing data relating to a congested port further downstream than the downstream port and a request to provide storage for data packets destined for the congested port further downstream.”

Claim 41 is patentable over Mayhew at least by virtue of its dependency from claim 39 and for the additional features recited therein.

Accordingly, reconsideration and withdrawal of the rejection of claims 29, 31, 33, 34, 36, 39 and 41 under 35 U.S.C. §102(e) based on Mayhew are respectfully requested.

#### Claim Rejections – 35 USC §103

Claims 1-14 and 48 were rejected under 35 U.S.C. §103(a) based on EP 0717532 to Calvignac in view of U.S. Pub. No. 2005/0088969 to Carlsen *et al.* (hereinafter “Carlsen”). Applicant respectfully traverses this rejection for at least the following reasons.

Applicant respectfully submits that Calvignac and Carlsen do not disclose, teach or suggest a method of congestion management within a switch or network of connected switches wherein the or each of the switches has a plurality of ingress ports and a plurality of egress ports, the method comprising: “when congestion is detected at a first ingress or egress port, sending a message to an upstream port connected to the first ingress or egress port indicating that congestion has occurred at a particular port and requesting storage at the upstream port of data packets destined for that port ; and, in dependence on the amount of data packets destined for the congested port stored at said upstream port, sending from the

upstream port to a further upstream port a message informing said further upstream port of the congestion at the first ingress or egress congested port, said further upstream port storing at said further upstream port data packets destined for the first ingress or egress congested port.”

The Examiner asserts at page 10, second paragraph (the paragraph that begins “Carlsen is the same field of invention...”) of the Office Action that Carlsen discloses the feature of

*“...in dependence on the amount of data packets destined for the congested port stored at the upstream port, sending from the upstream port to a further upstream port a message informing the further upstream port of the congestion at the first ingress or egress congested port and the further upstream port storing at the further upstream port data packets destined for the first ingress or egress congested port.”*

This is the feature that the Examiner acknowledges is not disclosed in Calvignac. However, in the office action dated 17th August 2009 the Examiner **specifically states**, on page 4, that Carlsen does not disclose the very same features that he now is objecting are disclosed by it. Therefore, Applicant is at a loss as to why the Examiner now relies upon Carlsen as allegedly disclosing this feature of claim 1. Applicant respectfully requests that the Examiner adopts a consistent position as to what the prior art teaches or does not teach.

As explained in Applicant’s previous Response, Carlsen relates to a LECN process and not a RECN process. The Examiner now refers to page 2 (paragraph [0012]) where there is discussion of the “cell credit manager” tracking credits associated with each virtual output queue in a memory subsystem of a switch. A separate virtual output queue is maintained for each destination within the switch. When a connection is made over the cross bar within the switch to a destination port, data is removed from the virtual output queue associated with that destination port and transmitted over the connection. However, when a destination port becomes congested, flow control within the switch will prevent data from leaving the virtual output queue associated with that destination.

As stated, if the credit count in the cell credit manager (with respect to each virtual output queue) drops below a threshold value, the cell credit manager views the associated

port as a congested port and asserts an XOFF signal. It does not send an XOFF signal further upstream to a further upstream port with respect to the congestion at the downstream port. Rather it asserts an XOFF signal so as to stop more data being sent from the virtual output queue to the destination port. This is a single stage process and in no way discloses the above identified features of claim 1.

The Examiner then refers to the rest of paragraph [0012] where it is indicated that the XOFF signal of the cell credit manager is received by plurality of ingress ports to the switch and assigns a designated destination port to the indicated status. In other words this is a single stage system in that data destined for the congested port is stored at the ingress port upstream from it. The Examiner then refers to page 10, lines 2 to 8. However, this section of Carlsen is not relevant to the claimed subject matter.

Thus, there is no disclosure or teaching in Carlsen of the above identified features of claim 1. Therefore, the combination of Calvignac and Carlsen does not disclose, teach or suggest the invention of claim 1.

Claims 2-14 and 48 are patentable Calvignac, Carlsen and any proper combination thereof at least by virtue of their dependency from claim 1 and for the additional features recited therein.

Accordingly, reconsideration and withdrawal of the rejection of claims 1-14 and 48 under 35 U.S.C. §103(a) based on Calvignac in view of Carlsen are respectfully requested.

Claims 19-24 were rejected under 35 U.S.C. §103(a) based on Carlsen in view of Calvignac. Applicant respectfully traverses this rejection for at least the following reasons.

Applicant respectfully submits that claim 19 is patentable over Carlsen, Calvignac and any proper combination thereof for at least similar reasons as provided above for claim 1 and for the features recited therein.

For example, Carlsen, Calvignac and any proper combination thereof do not disclose, teach or suggest a signaling protocol for managing congestion within a network of switches, the protocol comprising: "a first message for sending from a first port at which congestion is detected to an upstream port connected to the first port, the first message requesting establishment at the upstream port of a set aside queue for storing data packets received by the upstream switch destined for the source of congestion, the message including a token for storage by said upstream port, the protocol operating such that when said congestion clears, the established set aside queue is de-allocated and the corresponding token is passed

downstream in the direction of the previously congested port, in which when a certain amount of data packets are stored within the set aside queue in said upstream port a message containing a token is sent by said upstream port to a further upstream port requesting establishment of a set aside queue at said further upstream port for storage of data packets destined for the first port at which congestion has been detected.”

As indicated above, neither Carlsen nor Calvignac discloses the step of requesting establishment of a set aside queue at a further upstream port for storage of data packets destined for their first port at which congestion has been detected. Therefore, claim 19 is patentable over the combination of Carlsen and Calvignac.

Claims 20-24 are patentable over Carlsen, Calvignac and any proper combination thereof at least by virtue of their dependency from claim 19 and for the features recited therein.

Accordingly, reconsideration and withdrawal of the rejection of claims 19-24 under 35 U.S.C. §103(a) based on Carlsen in view of Calvignac are respectfully requested.

Claims 26-28, 30, 32, 35, 37-38 and 40 were rejected under 35 U.S.C. §103(a) based on Mayhew in view of Carlsen. Applicant respectfully traverses this rejection for at least the following reasons.

Claim 32 has been cancelled without prejudice or disclaimer, thus rendering moot the rejection of that claim.

Applicant respectfully submits that Mayhew, Carlsen and any proper combination thereof do not disclose, teach or suggest a switch for use in a network of switches, the switch comprising, *inter alia*, “request generation means arranged to send a request to a further upstream port to request storage of data packets destined for the downstream congested port at said further upstream port when a threshold amount of data packets destined for the downstream congested port are stored in the storage.”

Claim 26 is patentable over Mayhew, Carlsen and any proper combination thereof for at least similar reasons as provided above for claims 1 and 29 and for the features recited therein. In particular, referring, for example, to claim 26, there is no disclosure in either Carlsen or Mayhew that request generation means arranged to send a request to a further upstream port to request storage of a data packet destined for the downstream congested port at the further upstream port when a threshold amount of data packets destined for the downstream congested port are stored in the storage. Indeed, the Examiner again refers to

paragraph [0006] of Mayhew as disclosing this. However, as discussed above, this paragraph does not disclose the request for storage at a further upstream port of data packets destined for the downstream congestion. Indeed, this is a local congestion notification system.

Claims 27-28 are patentable over Mayhew, Carlsen and any proper combination thereof at least by virtue of their dependency from claim 26 and for the additional features recited therein.

Claims 30 and 35 are patentable over Mayhew, Carlsen and any proper combination thereof at least by virtue of their dependency from claim 29 and for the additional features recited therein. For example, for at least similar reasons provided above, Applicant respectfully submits that neither Mayhew nor Carlsen discloses, teaches or suggests a switch for use in a network of switches, the switch comprising, *inter alia*, "when congestion is detected at a first ingress or egress port, sending a message to an upstream port connected to the first ingress or egress port indicating that congestion has occurred at a particular port and requesting storage at the upstream port of data packets destined for that port ; and, in dependence on the amount of data packets destined for the congested port stored at said upstream port, sending from the upstream port to a further upstream port a message informing said further upstream port of the congestion at the first ingress or egress congested port, said further upstream port storing at said further upstream port data packets destined for the first ingress or egress congested port."

Claims 37 and 38 are patentable over Mayhew, Carlsen and any proper combination thereof at least by virtue of their dependency from claim 36 and for the additional features recited therein. For example, for at least similar reasons provided above, neither Mayhew nor Carlsen discloses, teaches or suggests a signaling protocol for managing congestion within a network of switches, the protocol comprising, "a first message for sending from a first port at which congestion is detected to an upstream port connected to the first port, the first message requesting storage of data packets received by said upstream port destined for the congested first port; and, a second message for sending by the upstream port to a port further upstream when a threshold amount of data packets destined for the congested first port have been received and stored by the said upstream port, said message requesting storage of data packets destined for the congested first port received by said further upstream port," as recited in claim 36.

Claim 40 is patentable over Mayhew, Carlsen and any proper combination thereof at least by virtue of their dependency from claim 39 and for the additional features recited



therein. For example, for at least similar reasons provided above, neither Mayhew nor Carlsen discloses, teaches or suggests an end station for use in a network of interconnected switches, the end station comprising, *inter alia*, "the egress port includes means operable in use to receive a message from a downstream port, the message containing data relating to a congested port further downstream than the downstream port and a request to provide storage for data packets destined for the congested port further downstream."

Accordingly, reconsideration and withdrawal of the rejection of claims 26-28, 30, 32, 35, 27-38 and 40 under 35 U.S.C. §103(a) based on Mayhew in view of Carlsen are respectfully requested.

CONCLUSION

Applicant has addressed the Examiner's rejections and respectfully submits that the application is in condition for allowance. A notice to that effect is earnestly solicited.

If any point remains in issue which the Examiner feels may be best resolved through a personal or telephone interview, please contact the undersigned at the telephone number listed below.

Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,

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